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Indian Standard

SPECIFICATION FOR KNITTED WORSTED MUFFLERS

(*First Revision*)

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Indian Standard
SPECIFICATION FOR KNITTED WORSTED MUFFLERS
(First Revision)

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Indian Standard

SPECIFICATION FOR KNITTED WORSTED MUFFLERS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 March 1984, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

0.2 This standard, originally published in 1963, has been revised to:

a) specify particulars of the grade of wool tops used for spinning worsted yarn,

b) specify tolerance on the mass of individual mufflers,

c) substitute the requirement for scouring efficiency with that for scouring loss, and

d) delete the requirement for colour fastness to perspiration.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes constructional details and other particulars of scoured, bleached or dyed mufflers made from worsted yarn.

1.2 This standard does not specify the general appearance, feel, shade and type of finish of the mufflers (*see also* **5.3**).

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*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 3596-1967* shall apply.

3. MATERIAL

3.1 Yarn used for knitting the mufflers and for making the tassels shall be spun on the worsted system from 58s grade wool top. The yarn shall be evenly spun and uniformly twisted. The approximate count and the single-thread breaking load of the yarn shall be in accordance with the requirements of Table 1.

NOTE — The specification for 58s grade wool tops shall conform to IS : 5911-1977†.

4. MANUFACTURE

4.1 The shape of the mufflers shall generally be as shown in Fig. 1. The mufflers shall be made from well-knit, plain, tubular fabric. The cut-ends shall be neatly secured by overlock stitches using 2 strands of cotton sewing thread of 100 dtex × 3 (60s/3 cotton count) conforming to IS : 1720-1978‡ and 1 strand of worsted yarn of the same count and shade as the yarn used for the mufflers. The stitches shall be of even tension throughout with all the loose-ends securely fastened off. The number of stitches/cm shall be not less than 4.

4.2 The tassels of a particular variety of mufflers shall be made from the same yarn as used for knitting the mufflers. They shall be securely tied to the mufflers at both the ends.

4.3 The mufflers shall be reasonably free from manufacturing defects, such as large mends, ladders and drop stitches. They shall also be free from chemical damage and dyeing defects such as streakiness and uneven dyeing.

5. REQUIREMENTS

5.1 Different varieties of the mufflers shall conform to the applicable requirements of Table 1.

5.1.1 The tassels shall be 6 to 7 cm long and shall be equally spaced. The number of strands in each tassel shall be 14.

---

*Glossary of terms relating to hosiery.

†Fineness grades of wool tops (*first revision*).

‡Specification for cotton sewing threads (*second revision*).

TABLE 1 CONSTRUCTIONAL DETAILS OF MUFFLERS

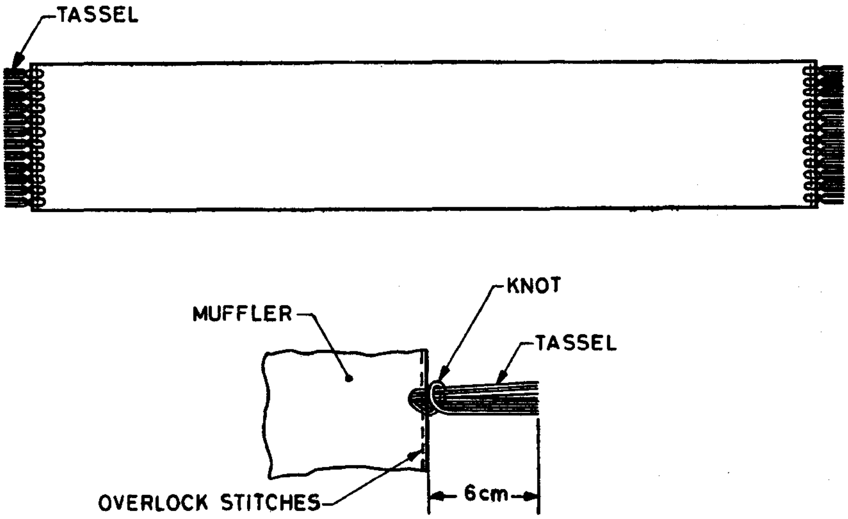
(*Clauses* 3.1 *and* 5.1)

VARIETY No.	YARN		WIDTH, *Min*	LENGTH	WALES PER dm	COURSES PER dm	NO. OF TASSELS ON EACH END	MASS OF 10 MUFFLERS, *Min* (*see* NOTE 3)
	Approximate Universal Count (Metric Count)	Single Thread Breaking Load, *Min* (*see* Notes 1 & 2)						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		N (gf)	cm	cm				kg
1	22 tex × 2 (N_m 45·4/2)	1·96 (200)	22·5	135	76	116	13	1·30
2	22 tex × 2 (N_m 45·4/2)	1·96 (200)	25	150	76	116	15	1·60
3	28 tex × 2 (N_m 35·7/2)	2·25 (230)	22·5	135	68	104	13	1·50
4	28 tex × 2 (N_m 35·7/2)	2·25 (230)	25	150	68	104	15	1·85
5	40 tex × 2 (N_m 25/2)	3·43 (350)	22·5	135	54	70	13	1·71
6	40 tex × 2 (N_m 25/2)	3·43 (350)	22·5	140	54	70	13	1·76
7	40 tex × 2 (N 25/2)	3·43 (350)	25	150	54	70	15	2·10
TOLERANCE	—	—	—	± 2	± 2	± 2	± 1	—
METHOD OF TEST	—	—	A-2	A-2	A-3	A-3	—	A-4

NOTE 1 — The breaking load of the yarn shall be determined on a test length of 500 mm using a constant-rate-of-traverse type machine having a traverse of 300 ± 15 mm/min.

NOTE 2 — The breaking load value of the yarn removed from the knitted mufflers shall be not less than 95 percent of the specified value.

NOTE 3 — A tolerance of minus 5 percent shall be permissible on the average mass of individual mufflers provided that the minimum collective mass is maintained specified above.



ENLARGED VIEW OF A LOOSENED TASSEL

FIG. 1 MUFFLER

5.2 The mufflers shall also conform to the requirements of Table 2.

5.3 Sealed Sample — If in order to illustrate or specify the indeterminable characteristics, such as general appearance, feel and finish, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

5.3.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

6. MARKING

6.1 A cloth label, securely attached to one corner of each muffler, shall be marked with the following:

a) Length and width of the muffler;

b) Manufacturer's name, initials or trade-mark; and

c) Any other information required by the buyer.

TABLE 2 OTHER REQUIREMENTS OF MUFFLERS

(*Clause* 5.2)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST
(1)	(2)	(3)	(4)
i)	Dimensional change in either direction (due to relaxation), percent, *Max*	5·0	A-5
ii)	*p*H value of aquous extract	5·0 to 8·0	IS : 1390-1961* (Cold method)
iii)	Scouring loss, percent, *Max*	4·0	A-6
iv)	Colour fastness to:		IS : 686-1957† or
	a) Light	4 or better	IS : 2454-1967‡ (*see* Note)
	b) Washing:		IS : 3361-1979§
	1) Change in colour	4 or better	
	2) Staining of adjacent fabrics	4 or better	
	c) Rubbing	4 or better	IS : 766-1956‖

NOTE — In case of dispute, colour fastness to light shall be determined by IS : 686-1957†.

*Methods for determination of *p*H value of aqueous extracts of textile materials.

†Method for determination of colour fastness of textile materials to daylight.

‡Method for determination of colour fastness of textile materials to artificial light (xenon lamp).

§Method for determination of colour fastness of textile materials to washing: Test 2 (*first revision*).

‖Method for determination of colour fastness of textile materials to rubbing.

6.1.1 The mufflers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provision of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. PRESERVATION

7.1 The mufflers shall be preserved with naphthalene balls using a minimum quantity of 5 kg per cubic metre volume of the bale.

8. PACKING

8.1 Mufflers of the same variety shall be packed together in a bale in accordance with IS : 2518-1964* or IS : 3353-1966† as the case may be. Alternatively, each muffler shall be suitably folded and packed in a polyethylene bag. Ten mufflers of the same variety shall then be tied with a twine or string to form a bundle.

9. SAMPLING

9.1 Lot — The quantity of mufflers of the same variety delivered to a buyer against one despatch note shall constitute a lot.

9.2 The number of mufflers to be selected from a lot for inspection shall be according to col 1 and 2 of Table 3. The mufflers shall be selected at random from the lot. In order to ensure randomness of selection, methods given in IS : 4905-1968‡ may be followed.

9.3 The number of tests and criterion for conformity for various characteristics shall be as follows:

Characteristic(s)	*Number of Tests*	*Criterion for Conformity*
Length, width, wales, courses and number of tassels	According to col 2 of Table 3	The number of defective mufflers does not exceed the corresponding number given in col 3 of Table 3
Mass	Equivalent to the number of sets of 10 worsted mufflers formed out of those selected according to col 2 of Table 3	All the observations satisfy the relevant requirements
Dimensional change, *p*H value, scouring loss and colour fastness	According to col 4 of Table 3	All the test results satisfy the relevant requirements

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*Code for seaworthy packaging of wool hosiery yarn and goods.

†Code for inland packing of wool hosiery yarn and goods.

‡Methods for random sampling.

TABLE 3 SAMPLE SIZE AND PERMISSIBLE NUMBER OF DEFECTIVES

(*Clauses* 9.2 *and* 9.3)

LOT SIZE (1)	SAMPLE SIZE (2)	PERMISSIBLE NUMBER OF DEFECTIVES (3)	SUB-SAMPLE SIZE (4)
Up to 300	10	1	2
301 ,, 500	20	2	3
501 ,, 1 000	30	3	5
1 001 and above	50	5	8

APPENDIX A

(*Tables* 1 *and* 2)

METHODS OF TEST

A-1. CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

A-1.1 The test specimens shall preferably be conditioned for testing and tested in the standard atmosphere as given in IS : 6359-1971*.

A-2. DIMENSIONS

A-2.1 Take a muffler from the test sample. Lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting it. Measure correct to the nearest half centimetre its length and width.

A-3. WALES AND COURSES

A-3.1 After measuring length and width, count with the help of a pick glass or magnifying glass the number of wales and courses per decimetre of the fabric at 5 different places without further handling of test specimen and calculate the average.

A-4. MASS

A-4.1 Take a set of 10 mufflers from the test sample. Condition them to moisture equilibrium for 24 hours (*see* **A-1.1**) and weigh to an accuracy of 10 g.

---

*Method for conditioning of textiles.

A-5. DIMENSIONAL CHANGE (DUE TO RELAXATION)

A-5.1 Marking of Test Specimens — Take a muffler from the test sample. Mark centrally on it by means of indelible ink or a cotton sewing thread an area 15 × 15 cm with two of its sides running in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface, carefully removing by hand all creases and wrinkles. Within this area mark 6 pairs of marks, 3 pairs each in the directions of wales and courses, in such a way that the distance between each pair of marks is the same.

A-5.2 Procedure

A-5.2.1 Place the test specimen on a glass plate and carefully remove by hand all creases and wrinkles without stretching it. Take another glass plate and place it on the test specimen. Measure correct to the nearest millimetre the distance between each pair of marks separately.

A-5.2.2 Lay the test specimen in flat position in a water tray of suitable size. Soak it under a head of 25 mm of water containing 0·5 percent suitable wetting agent at room temperature for 2 hours. Drain out the water and remove the test specimen carefully so that it is not stretched. Lay the specimen flat on a smooth surface. Remove the excess water with the help of an absorbent material or by keeping the smooth surface in a sloping position. Dry the specimen at room temperature.

NOTE — Removal of the excess water by wringing the test specimen is not permitted.

A-5.2.3 Proceed as in **A-5.2.1** and measure correct to the nearest millimetre the distance between each pair of marks separately.

A-5.3 Calculation

A-5.3.1 Calculate the dimensional change, percent, for each pair of marks in the directions of wales and courses by the following formula:

$$\text{Dimensional change (due to relaxation), percent} = \frac{100\,(a-b)}{a}$$

where

a = distance between a pair of marks before soaking, and
b = distance between the same pair of marks after soaking.

A-5.3.2 Determine the average dimensional change (due to relaxation), percent in each direction.

A-6. SCOURING LOSS

A-6.1 Test Specimen — Cut from each muffler in the test sample about 10 g of the fabric. Each such piece of the fabric shall constitute a test specimen.

A-6.2 Procedure

A-6.2.1 Dry the test specimen to constant mass in a drying oven at 105 ± 3°C and determine its mass accurately.

NOTE — Constant mass shall be deemed to have been reached if the difference between two successive weighings at an interval of 20 minutes is less than 0·05 percent.

A-6.2.2 Extract the above specimen with a mixture of benzene and methyl alcohol in the proportion of 3 : 2 in a Soxhlet apparatus for 4 hours at the rate of 5 extractions per hour, placing the specimen in a thimble and covering it with cotton wool previously extracted with the same mixture of benzene and methyl alcohol. Then distil off the solvent from the extract. Dry the residue to a constant mass (*see* Note *under* **A-6.2.1**) at 105 ± 3°C and determine the mass accurately.

A-6.3 Calculation — Calculate the scouring loss by the following formula:

$$\text{Scouring loss, percent} = \frac{100\,a}{b}$$

where

a = mass of the dry residue, and

b = mass of the test specimen.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	$1 \text{ N} = 1 \text{ kg.m/s}^2$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s } (\text{s}^{-1})$
Electric conductance	siemen	S	$1 \text{ S} = 1 \text{ A/V}$
Electromotive force	volt	V	$1 \text{ V} = 1 \text{ W/A}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$

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